The Effect of Clean Water Facilities and Household Food Sanitation Hygiene on Stunting in Toddlers

Samuel Marganda Halomoan Manalu[1], Deli Syaputri[2], Th. Teddy Bambang S[3], Nelson Tanjung[4], Risnawati Tanjung[5], Adisyah Putra Damanik[6]
[1,2,3,4,5,6]Politeknik Kesehatan Kementerian Kesehatan Medan

Email corespondence: samuelmhm@gmail.com

Track Record Article

Accepted: 29 August 2023
Revised: 23 September 2023
Published: 28 September 2023

How to cite:
Manalu, Halomoan, Marganda, S., Syaputri, D., S, Bambang, Teddy, T., Tanjung, N., Tanjung, R., & Damanik, Putra, A. (2023). The Effect of Clean Water Facilities and Household Food Sanitation Hygiene on Stunting in Toddlers. *Contagion: Scientific Periodical Journal of Public Health and Coastal Health*, *5*(3), 969–978.

Abstrak

Stunting is a linear growth disorder of a child's body that becomes short or short based on height for age with a Z-score threshold of < -2 standard deviations. Multi-dimensional factors, including environmental factors, cause stunting. Environmental factors that cause stunting are the mother's personal hygiene, sanitation, clean water and drinking water sources. This study aimed to determine the effect of clean water sanitation facilities and household food sanitation hygiene on stunting in toddlers. Observational study with a case-control design in children aged 0-59 months in Silahisabung District, Dairi Regency. The population used in this research is 453 toddlers aged 0-59 months. Case sampling technique using total sampling. All stunting toddlers were taken as cases of 78 toddlers and 78 as controls. Using weight scales and body length measuring instruments, research data was collected using questionnaires and tools to determine the nutritional status of babies under two years old. Data processing and analysis included univariate and bivariate using the chi-square test. The results showed that there were stunted toddlers, namely 61.5% did not have access to water facilities that met the requirements, and 44.9% of toddlers who suffered from stunting were in the age range of 21-40 months. Bivariate analysis using the chi-square test showed an effect of clean water sanitation (p=0.002, OR=2.764) and household food sanitation hygiene (p=0.004, OR=2.562) on the incidence of stunting in toddlers. Management of stunting events requires good coordination and collaboration between health workers, the government and the community in reducing risk factors. Personal hygiene will be further improved in preparing and processing food by practising the principles of food sanitation hygiene.

Keywords: Food Hygiene, Sanitation, Stunting, Toddlers

INTRODUCTION

Stunting is a linear growth disorder of a child's body to become short or very short based on height for age with a Z-score threshold <-2 standard deviations. Stunting is one of the nutritional problems in toddlers that has become a global concern in recent years, especially in low- and middle-income countries (Kemenkes RI, 2018a).

Stunting describes chronic malnutrition during growth and development from the beginning of life. This situation is represented by a z-score for height for age less than -2 standard deviations based on WHO growth standards. Globally, around 1 to 4 toddlers experience stunting. Nutritional problems, especially stunting in toddlers, can hinder children's development, with negative impacts that will take place in later life, intellectual decline,

vulnerability to non-communicable diseases, decreased productivity leading to poverty and the risk of giving birth to babies with low birth weight (UNICEF, 2019).

According to the World Health Organization (WHO), in 2022, the prevalence of short toddlers becomes a public health problem if the prevalence is 20% or more. Therefore, the percentage of short toddlers in Indonesia is still high and is a health problem that must be addressed. The prevalence of short toddlers in Indonesia is also the highest compared to Myanmar (35%), Vietnam (23%), Malaysia (17%), Thailand (16%) and Singapore (4%) (WHO, 2022).

In Indonesia, around 37% or nearly 9 million children under five are stunted worldwide, Indonesia is the country with the fifth largest prevalence of stunting. Toddlers or under-twos or babies under the age of two who are stunted will have a level of intelligence that is not optimal, making children more susceptible to disease and, in the future, can be at risk of decreasing levels of productivity (Kemenkes RI, 2018b).

In North Sumatra, the prevalence of stunting in 2013 was around 40%, and there was a decrease to 32.4%, the prevalence of stunting was 13.2%, and stunting was 19.2%. This result is still lower than the WHO standard, an area is said to be in a good category if the prevalence of stunting under five is less than 20% (Kemenkes RI, 2018b).

The cause of stunting consists of many factors that influence each other, and the causes are different in each region. The direct causes of stunting include inadequate nutritional intake and infectious diseases. Indirectly, stunting can be caused by factors such as family food security, parenting patterns, health services and inadequate environmental health, including water and sanitation. The basic causes of stunting are related to education, poverty, social culture, government policies and politics (WHO, 2020).

Poor environmental sanitation includes inadequate access to clean water, use of unsanitary latrines and poor hand hygiene behaviour, contributing to increased infectious diseases such as diarrhoea, Environmental Enteric Dysfunction (EED), and intestinal worms. These conditions can cause linear growth disorders and increase mortality in toddlers. One causal factor closely related to stunting is the factor of water, sanitation and hygiene (UNICEF, 2020).

Multi-dimensional factors, including environmental factors, cause stunting. Environmental factors that cause stunting are the mother's personal hygiene, sanitation, clean water and drinking water sources (Irianti et al., 2019).

Poor environments such as sanitation, drinking water and overcrowding are also causes of child stunting due to unhealthy behaviour due to low health knowledge. The role of

sanitation can affect the incidence of stunting because poor sanitation will increase the incidence of stunting (Mashar et al., 2021). Research by Rahayu et al., (2018) said there was a significant relationship between home sanitation and the incidence of stunting.

Nutritional intake in infants must be supported by hygienic sanitation and adequate environmental conditions. Environmental conditions include housing components, air quality, occupant behaviour and healthy home sanitation. Healthy home sanitation consists of basic healthy home sanitation and food and beverage sanitation (Kemenkes RI, 2018a).

Basic home sanitation facilities can provide a healthy environment that meets the minimum health requirements that every house must have to meet their daily needs. The scope of basic home sanitation is clean water supply facilities, family latrine facilities, waste disposal and wastewater treatment facilities. The scope of food management facilities are places for processing, handlers and storing food.

Based on the Indonesian Nutritional Status Survey in 2021, the prevalence of stunting in Dairi Regency is 30%, and the status is red (SSGI, 2021). The results of a preliminary survey that was conducted on the community in Silahisabung Subdistrict, Dairi Regency, found poor environmental conditions, such as a lack of sanitation, clean water supply and unsanitary food management behaviour, which makes children vulnerable to infectious diseases, which can lead to stunting in children.

Based on the description above, the authors are interested in researching The Effect of Clean Water Supply Facilities and Household Food Sanitation Hygiene on Stunting Incidents in Toddlers in Silahisabung District, Dairi Regency in 2022.

METHODS

This research is a quantitative analytic survey with a case-control research design. Case-control research is an observational analytical epidemiological study examining the relationship between the effects of certain diseases or health conditions and certain risk factors. This research was conducted in Silahisabung District, Dairi Regency in 2022. The time of this research was carried out from June to September 2022.

The population to be used in this study were all toddlers aged 0-59 months in Silahisabung District, Dairi Regency, with a total of 453 toddlers. The sample in this study were toddlers who were stunted and those who were not stunted. Comparison of sample control cases 1:1. The case sample is stunting toddlers, totalling 78 toddlers. Case sampling technique using total sampling. Where all stunting toddlers are taken as cases.

The control sample is toddlers who are not stunted, totalling 78 toddlers. The control sampling technique uses systematic random sampling. All toddlers who are not stunted are sorted using numbers, and then toddlers who are not stunted are divided by the number of controls taken, namely 375:78 = 4.8, so the control samples taken are every multiple of 5.The sample size of this study is 156 toddlers. Variables in independent research, namely clean water facilities and food sanitation hygiene, the incidence of stunting in children aged 0-59 months as the dependent variable.

They are collecting research data using a questionnaire and tools to determine the nutritional status of children under five using weight scales and body length measuring devices. Data is obtained using primary data and secondary data, primary data is data obtained directly at the research site, secondary data is data obtained indirectly from the research object but data that already exists or is available.

The data obtained from this study are presented as univariate and bivariate analyses using the chi-square statistical test to determine the relationship between clean water facilities and household food sanitation hygiene on the incidence of stunting in toddlers. Processing of research data using Statistical Program for Social Science (SPSS) software version 20 in the form of frequency distribution of each research variable and in the form of cross tabulation.

RESULTS

Table 1. Frequency Distribution of Household Clean Water and Food Sanitation Facilities

Variabel	Case		Control	
	n	%	n	%
Clean Water Facilities				
Types of Clean Water Facilities				
Dug Well	0	0	0	0
Piping System	0	0	0	0
Spring Protection	78	100	78	100
Terms of Clean Water Facilities				
Qualify	30	38,5	58	74,4
Not Qualified	48	61,5	20	25,6
Household Food Sanitation Hygiene				
Good Practice	32	41,0	57	73,1
Less Good Practices	46	59,0	21	26,9

Based on Table 1. The results showed that the requirements for clean water facilities in the case group did not fulfil the requirements as much as 48% while in the control group, the majority fulfilled the requirements as much as 58%.

The distribution of household food sanitation hygiene practices in the case group was the majority not good, namely 59%, while in the control group, the majority were good practices, namely 73.1%.

Table 2. Relationship between Clean Water Facilities and Stunting

Clean Water Facilities	Stunting Incident				Total		P-value	OR (95% CI)
	Not Stunting		*Stunting*					
	n	%	n	%	N	%		
Qualify	54	34,6	35	22,4	89	57,1	0,002	2,764 (1,435-5,327)
Not Qualified	24	15,4	43	27,6	67	42,9		
Total	**78**	**50**	**78**	**50**	**156**	**100**		

Table 2. shows that as many as 34.6% of respondents with clean water facilities met the requirements for having non-stunted toddlers and 22.4% had stunted toddlers. As many as 15.4% of respondents with clean water facilities did not meet the requirements for having non-stunted toddlers, and 27.6% had stunted children. This shows that respondents with clean water facilities did not meet the requirements of stunting toddlers more in the case group. Respondents with clean water facilities that do not meet the requirements tend to have stunted toddlers.

From the table above, the results of calculating the p-value are 0.002 (0.002 <0.05), then Ha is accepted (accepts the hypothesis) and Ho is rejected (hypothesis is rejected). This shows a significant influence of clean water facilities on stunting in children aged 0-59 months in Silahisabung District, Dairi Regency. This means that clean water facilities that do not meet the requirements can increase the incidence of stunting in children aged 0-59 months in Silahisabung District, Dairi Regency in 2022. The odds ratio obtained from the calculation is 2.764, meaning that clean water facilities that do not meet the requirements have a 2.764 times greater chance of having toddlers stunting than clean water facilities that meet the requirements. The odds ratio is accompanied by the desired confidence interval (CI). This research with 95% CI. The results of this study obtained a 95% CI 1.435 – 5.327.

Table 3. Relationship between Food Sanitation Hygiene and Stunting

Food Sanitation Hygiene	Stunting Incident				Total		P-value	OR (95% CI)
	Not *Stunting*		*Stunting*					
	n	%	n	%	N	%		
Good Practice	47	30,1	29	18,6	76	48,7	0,004	2,562 (1,344-4,884)
Less Good Practices	31	19,9	49	31,4	80	51,3		
Total	**78**	**50**	**78**	**50**	**156**	**100**		

Table 3. shows that as many as 30.1% of respondents with good household food sanitation practices had toddlers who were not stunted, while as many as 18.6% had stunted toddlers. As many as 19.9% of respondents with poor household food sanitation practices had

toddlers who were not stunted, and as many as 31.4% of respondents had stunted children. This shows that respondents with poor home food sanitation hygiene practices had more stunting toddlers in the case group. Respondents with poor household food sanitation hygiene practices tend to have stunted toddlers.

From the table above, the results of calculating the p-value are 0.004 (0.004 <0.05), then Ha is accepted (accepts the hypothesis), and Ho is rejected (hypothesis is rejected). This shows a significant effect of household food sanitation hygiene practice variables on the incidence of stunting in children aged 6 - 59 months in Silahisabung District, Dairi Regency. This means that poor household food sanitation hygiene practices can increase the incidence of stunting in children aged 0-59 months in Silahisabung District, Dairi Regency in 2022. The odds ratio obtained from the calculation is 2.562, meaning that household food sanitation hygiene practices that are not good have a chance of 2.562 times more likely to have stunted toddlers than good household food sanitation practices. The Odd Ratio is accompanied by the desired confidence interval (CI). This research has a 95% CI. The results of this study obtained a 95% CI 1.344 - 4.884.

DISCUSSION

The Relationship between Clean Water Facilities and Stunting Incidents

Lack of cleanliness of the water used daily causes infectious diseases such as diarrhea and intestinal worms, so toddlers will experience impaired absorption of nutrients in the digestive process, resulting in weight loss. Infectious diseases that last for a long time and often cause stunting in toddlers (Kemenkes RI, 2018a).

Households that consume drinking water sourced from tap water can increase the incidence of stunting in children compared to households that use tanks and well water. This can happen if the quality of tap water used by households needs to meet the physical quality requirements compared to tank and well water (Otsuka et al., 2019). Based on the Regulation of the Ministry of Health of the Republic of Indonesia Number 32 of 2017, the physical quality of drinking water must meet health requirements, namely not cloudy or clear, have no taste, no smell, no contamination with chemicals and free from various microorganisms that can cause children to experience stunting.

The research results show a p-value of 0.002 (0.002 < 0.05). This shows a significant influence of the variable clean water facilities on the incidence of stunting in children aged 0 - 59 months in Silahisabungan District, Dairi Regency. The Odd Ratio obtained from the calculation is 2.764, meaning that clean water facilities that do not meet the requirements have

a 2.764 times greater chance of having stunted toddlers than clean water facilities that meet the requirements.

The results of this study are the same as those of previous studies conducted by Nisa et al., (2021), which show that clean water supply facilities significantly influence the incidence of stunting in toddlers aged 24-59 months. This shows that most respondents with clean water supply facilities that do not meet the requirements have stunted children. In contrast, most respondents with clean water supply facilities that meet the requirements have children under five who are not stunted.

Research Mariana et al., (2021) stated that there is a relationship between clean water facilities and the incidence of stunting in toddlers (p-value = 0.015). Families with unhealthy clean water facilities have a 3.574 times higher risk of having stunted toddlers than those with clean water facilities that meet healthy criteria.

Research Pangaribuan et al., (2022) stated that there is a relationship between clean water sources and the incidence of stunting in toddlers, p-value = 0.041, that toddlers who use clean water sources that do not meet the requirements are 2.9 times more likely to experience stunting than the group that uses clean water sources that meet the requirements.

Environmental conditions, namely the lack of access to clean water sanitation facilities that do not meet the requirements, greatly affect the incidence of stunting. An environment that does not meet health requirements causes disease transmission from faeces to mouth, resulting in diarrhea, intestinal worms, and environmental enteropathy. Environmental enteropathy is a subclinical disorder condition believed to be caused by repeated intestinal infections, causing chronic problems with nutrient absorption due to changes in the intestinal wall. The infection makes it difficult for the body to absorb nutrients, when the nutritional needs are not met, it causes the energy in the toddler's body to be divided, and the energy that should be used for growth switches to the body's resistance to infection (Apriluana et al., 2018).

One of the causes of stunting is lack of access to sanitation because poor access to clean water and sanitation facilities can increase the incidence of infectious diseases, and this situation makes the growth and development process stop because the body's organ system focuses on fighting against the infections experienced. This incident can occur because poor sanitation can be a source of infectious diseases such as diarrhea, vomiting, worms and allergies (Novikasari et al., 2021).

These unhealthy clean water facilities show that some respondents still consume water that does not come from a clean and healthy source. This condition is related to water sources in the form of wells that do not meet healthy conditions, such as being close to septic tanks,

sewage channels that are not maintained or the process of boiling the water they consume. Apart from that, conditions for people who use water sources from the Regional Drinking Water Company also sometimes produce cloudy and smelly water.

The Relationship between Food Sanitation Hygiene and Stunting Incidents

Regulation of the Minister of Health of Indonesia No.1096/MENKES/PER/VI/2011, Foodstuffs are all materials, whether processed or not, including food additives and supporting materials. Practically securing food ingredients prevents damage and protects against contamination, either by food ingredients or environmental factors that will enter food ingredients. One of the causes of stunting is inappropriate or poor feeding patterns. Feeding patterns are a description of a person or group's actions to fulfil daily food needs, including food choices, beliefs held and attitudes (Siagian et al., 2021).

The research results show a significant influence of household food sanitation hygiene practice variables on the incidence of stunting in children aged 6 - 59 months in Silahisabungan District, Dairi Regency. This means that poor household food sanitation hygiene practices can increase the incidence of stunting in children aged 0-59 months in Silahisabungan District, Dairi Regency in 2022. The Odd Ratio obtained from calculations on the household food sanitation hygiene variable is 2.562, meaning that respondents with poor household sanitation hygiene practices have a 2.764 times greater chance of having stunted toddlers than respondents with good sanitation hygiene practices.

These results are by research Sukmawati et al., (2021), which showed that there was a significant relationship between the cleanliness of food equipment (p = 0.040) and cleanliness of food ingredients (p = 0.043) with the incidence of stunting. Research in Central Sulawesi shows a relationship between drinking water and food management and the incidence of stunting in toddlers (Syam et al., 2020). Research Mia et al., (2021) stated that the cleanliness of eating utensils is significantly related to the incidence of stunting among toddlers in Kurma Village, p-value = 0.040. Feeding practices in cleaning food that you want to eat or processing it poorly will provide more opportunities for stunting (Yudianti et al., 2017).

Infectious diseases negatively impact growth and nutrition; malnourished children die excessively from these diseases. So that good environmental sanitation conditions can protect children against stunting (Mukaramah et al., 2020). Child care patterns, in this case, proper feeding, can significantly contribute to determining a child's nutritional status (Khofiyah, 2019).

Cleanliness of food equipment in processing and serving food must comply with the requirements set by the Regulation of the Minister of Health of Indonesia No.1096/MENKES/PER/VI/2011, to avoid bacteria and germs that can cause disease in every

community. The results of this study are in line with the research of R et al., (2022), which shows that feeding is related to the incidence of stunting in toddlers, which means that in the practice of giving food and cleaning the food, you want to eat or processing that is not good will provide more opportunities for stunting to occur.

CONCLUSIONS

There is an influence between the sanitation of clean water facilities on the incidence of stunting in toddlers (p=0,002, OR=2,764), and There is an influence between household food sanitation hygiene and the incidence of stunting in toddlers (p=0,004, OR=2,562).

Personal hygiene will be further improved in handling and processing food by practising the principles of food sanitation hygiene. Related health agencies can increase the community's role by providing community education regarding maintaining and improving sanitation in providing clean water for residents. Furthermore, future researchers can conduct research on the chemical and biological categories of clean water quality.

REFERENCE

Apriluana, G., & Fikawati, S. (2018). Analisis Faktor-Faktor Risiko terhadap Kejadian Stunting pada Balita (0-59 Bulan) di Negara Berkembang dan Asia Tenggara. *Media Penelitian Dan Pengembangan Kesehatan*, *28*(4), 247–256. https://doi.org/10.22435/mpk.v28i4.472

Irianti, S., Prasetyoputra, P., Dharmayanti, I., Azhar, K., & Hidayangsih, P. S. (2019). The role of drinking water source, sanitation, and solid waste management in reducing childhood stunting in Indonesia. *IOP Conference Series: Earth and Environmental Science*, *344*(1), 1–9. https://doi.org/10.1088/1755-1315/344/1/012009

Kemenkes RI. (2018a). *Buletin Jendela Data dan Informasi Kesehatan: Situasi Balita Pendek (Stunting) di Indonesia*. Jakarta : Kementerian Kesehatan RI.

Kemenkes RI. (2018b). *Laporan Nasional Riskesdas 2018*. Jakarta : Kementerian Kesehatan RI.

Khofiyah, N. (2019). Hubungan antara status gizi dan pola asuh gizi dengan perkembangan anak usia 6-24 bulan. *Jurnal Riset Kebidanan Indonesia*, *3*(1), 37–48. https://doi.org/10.32536/jrki.v3i1.53

Mariana, R., Nuryani, D. D., & Angelina, C. (2021). Hubungan sanitasi dasar dengan kejadian stunting di wilayah kerja puskesmas Yosomulyo kecamatan Metro pusat kota Metro tahun 2021. *JOURNAL OF Community Health Issues*, *1*(2), 1–8. https://doi.org/10.56922/chi.v1i2.99

Mashar, S. A., Suhartono, S., & Budiono, B. (2021). Faktor-Faktor yang Mempengaruhi Kejadian Stunting pada Anak: Studi Literatur. *Jurnal Serambi Engineering*, *6*(3), 2076–2084. https://doi.org/10.32672/jse.v6i3.3119

Mia, H., Sukmawati, S., & Abidin, U. wusqa A. (2021). Hubungan Hygiene Dan Sanitasi Lingkungan Terhadap Kejadian Stunting Pada Balita Di Desa Kurma. *Journal Peqguruang: Conference Series*, *3*(2), 494–502. https://doi.org/10.35329/jp.v3i2.2553

Mukaramah, N., & Wahyuni, M. (2020). Hubungan Kondisi Lingkungan dengan Kejadian

Stunting pada Balita di Rt 08 , 13 dan 14 Kelurahan Mesjid Kecamatan Samarinda Seberang 2019. *Borneo Student Research*, *1*(2), 750–754. https://journals.umkt.ac.id/index.php/bsr/article/view/379

Nisa, S. K., Lustiyati, E. D., & Fitriani, A. (2021). Sanitasi Penyediaan Air Bersih dengan Kejadian Stunting pada Balita. *Jurnal Penelitian Dan Pengembangan Kesehatan Masyarakat Indonesia*, *2*(1), 17–25. https://doi.org/10.15294/jppkmi.v2i1.47243

Novikasari, L., Setiawati, & Subroto, T. (2021). Hubungan Riwayat Penyakit Infeksi Dengan Kejadian Stunting Pada Anak Usia 12-59 Bulan. *Jurnal Kebidanan Malahayati*, *7*(2), 200–206. https://doi.org/10.33024/jkm.v7i2.4140

Otsuka, Y., Agestika, L., Widyarani, Sintawardani, N., & Yamauchi, T. (2019). Risk factors for undernutrition and diarrhea prevalence in an urban slum in Indonesia: Focus on water, sanitation, and hygiene. *American Journal of Tropical Medicine and Hygiene*, *100*(3), 727–732. https://doi.org/10.4269/ajtmh.18-0063

Pangaribuan, S. R. U., Napitupulu, D. M., & Kalsum, U. (2022). Hubungan Sanitasi Lingkungan, Faktor Ibu dan Faktor Anak Dengan Kejadian Stunting Pada Anak Usia 24 – 59 Bulan di Puskesmas Tempino Kabupaten Muaro Jambi. *Jurnal Pembangunan Berkelanjutan*, *5*(2), 79–97. https://doi.org/10.22437/jpb.v5i2.21199

R, M., & Darmawi, D. (2022). Hubungan Pola Pemberian Makan Dengan Kejadian Stunting Pada Balita Usia 12-59 Bulan Di Desa Arongan. *Jurnal Biology Education*, *10*(1), 91–104. https://doi.org/10.32672/jbe.v10i1.4120

Rahayu, L. S., Safitri, D. E., & Yuliana, I. (2018). Child care practice as a risk factor of changes in nutritional status from normal to stunting in under five children. *Jurnal Gizi Dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics)*, *5*(2), 77–81. https://doi.org/10.21927/ijnd.2017.5(3).76-81

Siagian, J. L. S., Wonatoray, D. F., & Thamrin, H. (2021). Hubungan pola pemberian makan dan sanitasi lingkungan dengan kejadian stunting pada balita di Kelurahan Remu Selatan Kota Sorong. *Jurnal Riset Kebidanan Indonesia*, *5*(2), 111–116. https://doi.org/10.32536/jrki.v5i2.183

SSGI. (2021). *Buku saku hasil studi status gizi indonesia (SSGI) tingkat nasional, provinsi, dan kabupaten/kota tahun 2021*. Jakarta : Kementerian Kesehatan RI.

Sukmawati, Abidin, U. W., & Hasmia. (2021). Hubungan Hygiene dan Sanitasi Lingkungan Terhadap Kejadian Stunting Pada Balita di Desa Kurma. *Journal Peqguruang: Conference Series*, *3*(2), 495–502. https://doi.org/10.35329/jp.v3i2.2553

Syam, D. M., & Sunuh, H. S. (2020). Hubungan Kebiasaan Cuci Tangan, Mengelola Air Minum dan Makanan dengan Stunting di Sulawesi Tengah. *Gorontalo Journal of Public Health*, *3*(1), 15–22. https://doi.org/10.32662/gjph.v3i1.919

UNICEF. (2019). *The State of the World's Children 2019. Children, Food and Nutrition: Growing well in a changing world*.

UNICEF. (2020). *Situasi Anak di Indonesia*. United Nations Children's Fund (UNICEF). https://www.unicef.org/indonesia/sites/unicef.org.indonesia/files/2020-07/Situasi-Anak-di-Indonesia-2020.pdf

WHO. (2020). *Levels and trends in child malnutrition: Key findings of the 2020 Edition of the Joint Child Malnutrition Estimates.* Ganeva : World Health Organization.

WHO. (2022). *Stunting prevalence among children under 5 years of age (JME)*. https://www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-jme-stunting-prevalence

Yudianti, Y., & Saeni, R. H. (2017). Pola Asuh Dengan Kejadian Stunting Pada Balita Di Kabupaten Polewali Mandar. *Jurnal Kesehatan Manarang*, *2*(1), 21–25. https://doi.org/10.33490/jkm.v2i1.9